



PvuI (7)
SgfI (6) MfeI (82) EcoNI (96)
1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTGGCAATTGAACGGGTGCCTA
101 GAGAAGGTGGCGGGGTAACGGAAAGTGATGCTGTACTGGCTCCGCCTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (203) **HindIII (245)** Bsu36I (291)
PvuII (239) EcoNI (287)
201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCTCTTACCGCGCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGTTGAGTGCAGTCTGCCGCTCCCGCTGTGGTGCCTCTGAAGTGCCTCCGCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCCGGGCTCCCTTGAGAGCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTCTCAACTCTACGTCTTTGTTTCGTTT

KasI (535) **AgeI (552)** SphI (560)
501 TCTGTTTGTCCGGCTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTGAGCATGCTTGGTCTGGGCCAGCCTCTGGCCGTCCTGCC
1▶Me tLeuArgSer Gl yProAl aSer Gl yProSer Val P r
SandI (667)
601 CACTGGCCGGCCATGCCGAGTCCCGGCTGCCAGACCCGGCTGCCCGGAGCTGGGGCTTAGGGTCCCCGACCTCTCCTACTCTCGTCCGCC
13▶oThr Gl yArgAl aMe tProSer ArgArgVal Al aArgP roP roAl aAl aP roGl uLeuGl yAl aLeuGl ySer P roAspLeuSer Ser LeuSer LeuAl a

XmnI (750) SrfI (782)
701 GTTTCAGGAGCACAGATGAATTGGAGATCATCGACGAGTACATCAAGGAGAACGGCTTCGGCCTGGACGGGGACAGCCGGCCCGGGCAGGGGCTGC
47▶Val SerArgSer ThrAspGl uLeuGl ul l e l l eAspGl uTyr l l eLysGl uAsnGl yPheGl yLeuAspGl yGl yGl nP roGl yP roGl yGl uGl yLeuP

BstEII (837) KasI (855) **PshAI (899)**
801 CACGCTGGTGTCTCGCGGGGCTGCGTCCCTGAGCAGGTCACCTGGGCCCTGTGGCGCCCCAGCCACGCCCGCCCTTGGGGCTGCCCTTGGGCCG
80▶r oArgLeuVal Ser ArgGl yAl aAl aSer LeuSer Thr Val Thr LeuGl yProVal Al aP roP roAl aThr P roP roP roT rpGl yCysP roLeuGl yAr

SpeI (900) SrfI (920) SphI (971) **BsrBI (999)**
901 ACTAGTGTCCCCAGCGCCGGCCCGCCGACCGCACCTGGTTCATCACGGAGCAGCCCAAGCAGCGCCGATGCGCTTCCGCTACGAGTGCAGGGC
113▶gLeuVal Ser P roAl aP roGl yP roGl yP roGl nP roHi sLeuVal l l eThr Gl uGl nP roLysGl nArgGl yMe tArgPheArgTyrGl uCysGl uGl y

EagI (1004)
1001 CGCTCGCCGGCAGCATCTTGGGGAGAGCAGCACCGAGGCCAGCAAGACGCTGCCCGCCATCGAGCTCCGGGATTGTGGAGGGCTGCGGGAGGTGGAGG
147▶ArgSer Al aGl ySer l l eLeuGl yGl uSer Ser Thr Gl uAl aSer LysThr LeuP roAl a l eGl uLeuArgAspCysGl yGl yLeuArgGl uVal Gl uV

1101 TGACTGCTGCTGGTGTGGAAGGACTGGCTCACCCACAGCCTCGTGGGGAAAGACTGCACCGACGCATCTGCAGGGTGCAGGCTCCG
180▶al Thr Al aCysLeuVal T rpLysAspT rpP roHi sArgVal Hi sP roHi sSer LeuVal Gl yLysAspCysThrAspGl y l l eCysArgVal Ar gLeuAr

BsrBI (1279)
1201 GCCTCACGTACGCCCCGGCACAGTTTTAAACAACCTGGGCATCCAGTGTGTGAGGAAGAAGGAGATTGAGGCTGCCATTGAGCGGAAGATTCAACTGGGC
213▶gP roHi sVal Ser P roArgHi sSer PheAsnAsnLeuGl y l l eGl nCysVal Ar gLysLysGl ul l eGl uAl aAl a l eGl uArgLys l l eGl nLeuGl y

SandI (1318) StuI (1373) Eco147I (1373)
1301 ATTGACCCCTACAACGCTGGGTCCCTGAAGAACCATCAGGAAGTAGACATGAATGTGGTGAAGATCTGCTTCCAGGCCTCATATCGGGACCAGCAGGGAC
247▶l l eAspP roTyrAsnAl aGl ySer LeuLysAsnHi sGl nGl uVal AspMe tAsnVal Val Ar gl l eCysPheGl nAl aSer TyrArgAspGl nGl nGl yG

BamHI (1413)
1401 AGATGCGCCGGATGGATCCTGTGCTTCCGAGCCGCTATGACAAGAATCCACAAACACATCAGAGCTGCGGATTTGCCGAATTAACAAGGAAAGCGG
280▶l nMe tArgArgMe tAspP roVal LeuSer Gl uP roVal TyrAspLysLysSer ThrAsnThr Ser Gl uLeuArg l l eCysArg l l eAsnLysGl uSer Gl

1501 GCCGTGCACTGGTGGCAGGAGCTACTTGTCTGCGACAAGGTGCAGAAAGAGGACATATCAGTGGTGTTCAGCAGGGCCTCTGGGAAGGTGCGGGCT
313▶yP roCysThr Gl yGl yGl uGl uLeuTyrLeuLeuCysAspLysVal Gl nLysGl uAsp l l eSer Val Val PheSer ArgAl aSer T rpGl uGl yArgAl a

1601 GACTTCTCCAGGCCGAGGTGCACCGCCAGATTGCCATTGTGTTCAAGACGCCGCCCTACGAGGACCTGGAGATTGTGCGACCCGTGACAGTCAACGCTC
347▶AspPheSer Gl nAl aAspVal Hi sArgGl n l l eAl a l l eVal PheLysThr P roP roTyrGl uAspLeuGl ul l eVal Gl uP roVal Thr Val AsnVal P

NruI (1758)
1701 TCCTGCAGCGGCTCACCGATGGGGTCTGCAGCGAGCCATTGCCTTTCACGTACCTGCCTCGCGACCATGACAGCTACGGCGTGACAAGAAGCGGAAACG
380▶heLeuGl nArgLeuThrAspGl yVal CysSer Gl uP roLeuP roPheThr TyrLeuP roArgAspHi sAspSer TyrGl yVal AspLysLysArgLysAr

NcoI (1842)
1801 GGGGATGCCCGACGTCTTGGGGAGCTGAACAGCTCTGACCCCATGGCATCGAGAGCAAACGGCGGAAGAAAAGCCGGCCATCCTGGACCACTTCTCTG
413▶gGl yMe tP roAspVal LeuGl yGl uLeuAsnSer SerAspP roHi sGl y l l eGl uSer LysArgArgLysLysLysP roAl a l l eLeuAspHi sPheLeu

1901 CCCAACACCGGCTCAGGCCGTTCTCCCGCCGTCAGCCCTGCTGCCAGACCTGACTTCTTCTGCGACCGTGTCCCTGCCCGGCTGGAGCCCCCTG
447▶P roAsnHi sGl ySer Gl yP roPheLeuP roP roSer Al aLeuLeuP roAspP roAspPhePheSer Gl yThr Val Ser LeuP roGl yLeuGl uP roP roG

Eco47III (2098) NheI (2095)
2001 GCGGGCTGACCTCCTGGACGATGGCTTTGCCTACGACCTACGGCCCCACACTCTTACCATGCTGGACCTGCTGCCCGGGCACCAGCCACAGCTAG
480▶l yGl yP roAspLeuLeuAspAspGl yPheAl aTyrAspP roThr Al aP roThr LeuPheThr Me tLeuAspLeuLeuP roP roAl aP roP roHi sAl aSe

2101 CGTGTGTGTGTCAGCGGAGGTGCCGGGCGTGGTTGGGGAGACCCCGCCCTGAACCACTGACACTGGACTCGTACCAGGCCCGGGCCCGGGGAT
513▶r Al aVal Val CysSer Gl yGl yAl aGl yAl aVal Val Gl yGl uThr P roGl yP roGl uP roLeuThr LeuAspSer TyrGl nAl aP roGl yP roGl yAsp

BstXI (2210) **BspLU11I (2228)**
2201 GGAGGACCAGCCAGCCTGTGGGCAGCAACATGTTCCCAATCATTACCGGAGGCGGCCTTTGGGGGCGGCCTCTATCCCCGGGCGCTGAAGCCACGT
547▶Gl yGl yThr Al aSer LeuVal Gl ySerAsnMe tPheP roAsnHi sTyrArgGl uAl aAl aPheGl yGl yGl yLeuLeuSer P roGl yP roGl uAl aThr •

MscI (2329) NheI (2323)
2301 AGCCCCGCGATGCCAGAGAAATTCCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTAAAAAATGCTT
580▶••

EcoRI (2317) **BalI (2329)**
2401 TATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAACAACAACAATTGCATTCATTTTATGTTTCAGGTT

HpaI (2461) MfeI (2472)

2501 CAGGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACCTTTAACCTCCAATCA
EcoRI (2557)
2601 AGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATG

2701 GAGTTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTCTTTCATTTCTTATGTTTTAAATGCACTGACCTCCACATTCCTTTTATGAAAATA
SspI (2796)

2801 TTCAGAAATAATTTAAATACATCATTGCAATGAAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTGTAGT
SwaI (2810)

2901 AGTTGGACTTAGGGAACAAAGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCC
141 •••AsnArgThr TyrLysLeuProlLeuGluG
3001 TCAATGGTGGTTTTGACCAGCTTGCATTCTCAATGAGCACAAGCAGTCAAGGAGCATAGTCAGAGATGAGCTCTCTGCACATGCCACAGGGGCTGA
129 IuIleThr ThrLysValLeuLysGlyAsnMetGluIleLeuValPheCysAspProAlaTyrAspSerIleLeuGluArgCysMetGlyCysProSerVa
BstXI (3100)

3101 CCACCCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAAGTCTTCTGCCGTTGCTCACAGCAGACCCAATGGC
96 IValArgIleSerArgAspValGluAspSerTyrProHisArgValAlaValIleThrAspPheAspLysGlnGlyAsnSerValAlaSerGlyIleAla
StuI (3235)
Eco147I (3235)

3201 AATGGCTTCAGCACAGACAGTGACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATCTCCCAGTCTTGGTCTGATGGCCGCCCGACATGG
63 IleAlaGluAlaCysValThrValArgGlyIleTyrAlaGluIleHisValAlaSerIleIleGluGlyThrLysThrArgIleAlaAlaGlyValHisH
BspHI (3385)

3301 TGCTTGTTCCTCATAGAGCATGGTGATCTTCTCAGTGGCGACCTCCACCAGCTCCAGATCTGCTGAGAGATGTTGAAGGCTTCTATGATGGCCCTCC
29 ILeLysAsnAspGluTyrLeuMetThrIleLysGluThrAlaValGluValLeuGluLeuAspGlnGlnSerIleAsnPheThrLysMet
XmnI (3377)

3401 TATAGTGAGTCGTATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTTCCTAA
VspI (3443)
AseI (3443)

3500 CGAGCTCTGTTATATAGACCTCCACCGTACACGCCTACCGCCATTTCGCTCAATGGGGCGGAGTTGTTACGACATTTGGAAAGTCCCGTTGATTTA
SpeI (3598)

3600 CTAGTCAAACAAACTCCCATTGACGTCAATGGGGTGGAGACTTGAAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACC

3699 GCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAGGTCATGACTGGGCATAATGCCAGGCGGGCCATT
SnaBI (3726)
Eco105I (3726)

3799 ACCGTCATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGATGACTGCCAAGTGGGCAGTTTACCGTAAATACTCCACCATTGACGTCAA
NdeI (3831)

3899 TGGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGTCTGTTGGCGGTGAGCCAGGCGGGCCATTACCGTAA

3999 GTTATGTAACGCTGCAGGTTAA TTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGCCGCGTTGCTGGCGTTTTCCATA
SdaI (4009)PacI (4017) BspLU11I (4027)

4097 GGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAG

4197 CTCCTCTGCGCTCTCTGTTCCGACCCTGCCGTTACCGGATACCTGTCCGCTTTCTCCCTTCGGAAAGCGTGGCGCTTCTCATAGCTCACGCTGT

4297 AGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTTCAGCCGACCCTGCGCCTTATCCGGTAACTATCGTC

4397 TTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTT

4497 GAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAGTTGGTAGCTCTTGA

4597 TCCGGCAAACAACCACCGCTGGTAGCGGTGTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTT

4697 CTACGGGTCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGAATAAAATATCT
EagI (4777)
PacI (4757) SwaI (4766) NotI (4776)

4797 TTATTTTTCATTACATCTGTGTGTTGTTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAAATAGG

4897 CTGTCCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGAA